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ANNUAL REPORT

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OF THE

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EASTERN ROCKIES FOREST

CONSERVATION BOARD

FOR THE

FISCAL YEAR

1963-64

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EASTERN ROCKIES FOREST CONSERVATION BOARD

714 - 11 Ave., S.W.

Calgary, Alberta

July 15, 1964

ANNUAL REPORT

of the

EASTERN ROCKIES FOREST CONSERVATION BOARD

for the

FISCAL YEAR

1963-64

J. R. H. Hall

Chairman

CALGARY, Alberta

March 31, 1964

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EASTERN ROCKIES FOREST CONSERVATION BOARD

514 - 11 Ave. S. W.

Calgary, Alberta

July 15, 1964

The Honorable Maurice Sauve
Minister of Forestry
OTTAWA, Ontario

Sir:

I have the honour to submit herewith the Annual Report of the Eastern Rockies Forest Conservation Board for the fiscal period April 1, 1963 to March 31, 1964, pursuant to the provisions of The Eastern Rocky Mountain Forest Conservation Act of 1947. I am

Your obedient servant

J.R.H. Hall
Chairman

2299459

EASTERN ROCKY MOUNTAIN FOREST COMMISSION
FOREST COMMISSION

1945-1946

Report

July 1, 1945

July 1, 1945

The Forest Commission of the Province of Alberta

Minister of Forestry

The Honourable Mr. J. G. McCreary

Minister of Forestry

Ottawa, Ontario

Sir,

I have the honor to acknowledge the receipt of your letter of the 27th inst. regarding the report of the Forest Commission of the Province of Alberta for the year 1944-1945. I am sorry that I cannot reply to you more fully at this time, but I am sure that the report will be of great interest to you.

Very respectfully,
J. G. McCreary

Minister of Forestry

Alberta

Edmonton

Canada

2288439



EASTERN ROCKIES FOREST CONSERVATION BOARD
514 - 11 Ave. S.W.
Calgary, Alberta

July 15, 1964

The Honourable Norman Willmore
Minister of Lands and Forests
Edmonton, Alberta

Sir:

I have the honour to submit herewith the Annual Report of the Eastern Rockies Forest Conservation Board for the fiscal period April 1, 1963 to March 31, 1964, pursuant to the provisions of The Eastern Rocky Mountain Forest Conservation Act of 1947. I am

Your obedient servant

J.R.H. Hall
Chairman

EASTERN ROCKIES FOREST CONSERVATION BOARD

514 - 11 Ave. S.W.

Calgary, Alberta

July 13, 1964

The Honorable Thomas Williams
Minister of Lands and Forests
Edmonton, Alberta

I have the honor to submit herewith the
Annual Report of the Eastern Rockies Forest Conservation Board for the
fiscal period April 1, 1963 to March 31, 1964, pursuant to the provision
of the Eastern Rockies Forest Conservation Act of 1957. I am

Your obedient servant

J. R. M. Hall
Chairman

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EASTERN ROCKIES FOREST CONSERVATION BOARD

Board Members

Chairman and Provincial Member

J.R.H. Hall

Provincial Member

A.T. Baker, B.A.

Federal Member

G. Tunstell, B.Sc.F.

Principal Officers

Chief Forester

W.R. Hanson

Secretary

J.M. Marshall

INTRODUCTION

A close contact has been maintained throughout the year with the Alberta Forest Service who, under the terms of the Agreement between the two governments, has the responsibility, under the direction of the Board, to carry out the approved work program and to perform all administrative functions in connection with the protection and management of the area.

During the year the Board reviewed and amended its policy statements and made a start on the preparation of Conservation Unit Guides which will assist the Province in the preparation of a management plan for each administrative unit into which the area has been subdivided.

Substantial progress was made in the program which is being carried out under the direction of the Steering Committee on Watershed Research. The Board is grateful to that committee, and to the many Federal and Provincial agencies working with it, for making studies and collecting data which will help to improve watershed management.

Thanks are due to two branches of the Department of Forestry, Canada, for work undertaken on the area as reported on pages 19 to 22.

The Board is particularly indebted to the Alberta Forest Service for the efficient manner in which it has carried out its responsibilities.

ADMINISTRATION

Six meetings of the Board were held in Calgary, Alberta, during the year under review. Minutes of the meetings were duly recorded and copies submitted to the Minister of the Department of Forestry, Canada, and the Minister of the Department of Lands and Forests of the Province of Alberta.

There were no changes in Board personnel during the year under review; the staff comprising:

Chief Forester
Secretary
Foresters (2)
Draftsman
Clerk-Stenographer

The above permanent staff is supplemented, as the need arises, by engaging the services of such consultants as may be required on a fee basis, forestry students to assist with field studies related to watershed research and watershed management during the summer and such temporary stenographic staff as may be required during peak work and vacation periods.

The administrative and field staff of the Rocky Mountains Forest Reserve, comprising 75 persons, are employees of the Alberta Forest Service and are directly responsible to the Director of Forestry. In addition to the foregoing there were 23 lookoutmen employed on a seasonal basis and approximately 50 persons engaged on a temporary basis on road construction and improvement, stand-by fire duty, campground clean-up and other duties.

A summary showing the distribution of the Forest Reserve staff is appended hereto. (Appendix "A")

FOREST WATERSHED MANAGEMENT

The need for watershed management has become more obvious with an increase in the present demands for water and the certainty that more water will be required in the future for downstream use. Utilization of the Conservation Area in, logging of forest products, grazing by domestic and wild animals, fishing, hunting, camping and other forms of recreation, and the exploitation of petroleum and mineral products, requires controls to avoid damage to watershed values. A study of the many problems raised in utilizing the resources of this area, and at the same time protecting it as a source of supply for water, has emphasized the need for care to protect these headwater areas.

Both the Board and the Alberta Forest Service have intensified their efforts upon watershed protection in a multiple use program for the Rocky Mountains Forest Reserve. The Board has also applied considerable effort to finding ways of improving watershed and restoring good condition to land where damage has occurred. Considerable progress can be reported for both organizations. The work of the Board, and some of the work of the Alberta Forest Service, is reported herein, but details of the latter organization are presented in the Annual Report of the Alberta Department of Lands and Forests.

In keeping with The Eastern Rocky Mountain Forest Conservation Act, and as agreed upon between the Board and the Alberta Forest Service, the Board continued its work of policy making and top-level planning. The Alberta Forest Service planned management and administration within the bounds of the established policy and according to the programs and guide lines supplied by the Board.

BOARD POLICY

During the year the Board reviewed its policy and the fulfillment of policy by the Alberta Forest Service. Revisions were made in the

Recreation and Road sections of the manual in order to bring them up to date. A review of the management and administration of the Conservation Area indicated that Board policy is being followed generally. Inspection indicated a keen interest in, and a growing understanding of, watershed management.

CONSERVATION UNIT GUIDES

For improvement in management, the Conservation Area is subdivided into 29 units.

The Alberta Forest Service has made a start in the preparation of a management plan for each of these. These are based on conservation unit guides prepared by the Board. The general guide, Conservation Unit Guide - Part I General, was completed and revised during the year. Guides for two individual conservation units, the Oldman (C-2) and the Castle (C-3), were completed and placed in the hands of the Alberta Forest Service for their use in management planning. Preliminary work was done on two more unit guides, the Red Deer and the Foothills.

The guides for the individual units are manuscripts of about 25 pages of text, plus some 35 pages of tables, maps and figures. The unit is described, giving information pertinent to management, and an analysis of the problems is presented. Damage to the watershed, such as erosion and siltation from road construction, seismic lines causing the cutting of new stream channels, oil well sites silting up adjacent streams, stream blockage by logging debris, water pollution and others which were found in the watershed survey are noted. The guide concludes with an outline of standards of watershed condition which are to be attained through management. In the headwaters zone snow accumulation and conditions to delay snow-melt are stressed. In the intermediate and valley zones where logging, grazing, mining and drilling and recreational use are extensive, the protection of the pristine watershed conditions and the restoration of damaged areas are required. In specific cases, such as a pipe line which is bare and eroding, stabilization of the surface, improvement of infiltration and control of over-land flow through revegetation and mechanical means are requested.

Some recently devised techniques of watershed problem analysis have been adapted from other work and some original methods developed. Area-elevation, area-slope, drainage density and stream profiles with areal maps and distribution curves are computed by the methods outlined in Applied Hydrology by Linsley, Kohler and Paulhus. Streamflow parameters used, besides the usual ones of total and momentary maximum flow, include the half-flow date and half-flow interval calculated from the quartile flow distribution developed by the Pacific Southwest Forest and Range Experiment Station, Berkeley, California.

Area aspect (land area on differently facing slopes) is determined by an original method developed by the Board's draftsman. Four classes are used: The cool humid aspect (NE), the warm dry

spect (SW), the intermediate cool (NW), and the intermediate warm (SE). From the precipitation gauge network and elevations, snowpack and pre-precipitation zones are drawn and total precipitation calculated by sub-basins. The result of a damage survey are also included.

Each unit is covered by a field survey, before the guide is written, to supply information on watershed problems and damage to watershed or other resources. In this survey, land is classified on the basis of best use of wild land into the following: (1) Headwaters zone (high elevation, managed primarily for water yield), (2) Intermediate zone (water still the primary product but other uses also important - multiple use areas), (3) Valley zone (Montane - protection of watershed against damage by use is the most important part of management), (4) Water margin zone (reservoir sites and recreational areas), (5) Travel zone and (6) Special zones (such as wilderness areas or geophysical areas). Watershed condition and damage hazard are rated for each sub-basin. Damage to watershed values through lumbering, grazing, road building, or any other cause is also noted.

The guides conclude with a section which outlines the watershed condition which should be attained. Where damage has occurred, the desired results to be attained through restoration methods are given and conditions which should be maintained by protective measures are outlined.

The general conservation unit guide and three individual unit guides; the Oldman, Castle and Red Deer, are in use by the Alberta Forest Service in their management planning.

WATERSHED
CONDITION
RESTORATION

A large scale demonstration of watershed restoration methods was conducted on a 50-acre, severely - eroded borrow pit at Barrier Dam in the Kananaskis valley with the co-operation of Calgary Power Limited who provided funds for equipment rental totalling \$1,500. Board staff supervised the construction of a network of contour trenches with dividers, gully plugs and a diversion trench protecting the contour trenches from above. Unfavorable weather conditions prevented seeding the area to grass in the fall and this will be done during the coming season.

INSPECTIONS

Board staff carried out inspections and in-

vestigations of timeberberths, roads and trails, grazing allotments, petroleum and mineral activities and special uses as required throughout the year. Reports were made and problems discussed with the Alberta Forest Service.

MANAGEMENT BY THE ALBERTA FOREST SERVICE

The activities of the Alberta Forest Service are reported annually in the report of the Alberta Department of Lands and Forests and many are not segregated between the Conservation Area and the rest of the area under its jurisdiction. For this reason only part of the activities of the Alberta Forest Service are reported herein.

WATERSHED MANAGEMENT

The Management Plans Section prepares plans for each management unit and have included some watershed management in the Oldman (C-2) Multiple Use Management Plan completed during the report year. Some plans and activites involving watershed protection were reported on to the Board and approved; such as, a road construction and maintenance program which included procedures for watershed protection, fire protection methods, and a set of rules and guiding principles governing timber cutting practices which were drawn up in cooperation with Board staff.

The following brief report covering various phases of land management was supplied by the Alberta Forest Service:

SILVICULTURE SECTION

Silviculture projects carried out by the Forest Service during the year under review are outlined hereunder:

<u>Project</u>	<u>Total</u>
Land Scarified	612 Acres
Land Seeded	812 "
Planted	22,500 Seedlings
Thinned	281 Acres
Seed Collected	88 Bushels

only during 1964-65.

All projects are to be stepped up consider-

MANAGEMENT PLANS SECTION

It is the common objective of the Alberta Forest Service and the Eastern Rockies Forest Conservation Board that the Rocky Mountains Forest Reserve shall be managed and protected in such a manner as to conserve the watershed values primarily, and at the same time utilize the other resources of the area.

Consequently, forest management units have been established according to topography and major watersheds and divided further into compartments and subcompartments on a drainage basis to facilitate management.

To achieve one primary objective of the Alberta Forest Service of a planned program of orderly timber harvesting under sustained yield, annual allowable cuts are being calculated and implemented on an area-volume basis for each management unit thereby governing the area and volume of timber extracted under annual and periodic controls. The maximum annual area is not to exceed 3% of the total drainage basin area.

Effective October 1, 1963, guiding principles and rules governing timber cutting practices were established and forwarded to all timber licensees by the Alberta Forest Service. Timber may be clear cut or marked depending on the species and condition of the timber. When a stand is approved for clear cutting, it is to be carried out in alternate strips or blocks not exceeding 40 acres in size nor in width of over 10 chains. In stands to be harvested under the marking system, the volume removal is to approximate 40%.

FOREST LAND USE SECTION

The Forest Land Uses are administered by the Alberta Forest Service in line with the policies of the Eastern Rockies Forest Conservation Board. The report on Grazing Management of the Rocky Mountains Forest Reserve is outlined hereunder:

GRAZING

Range Condition. Condition of the range remained satisfactory throughout the Forest Reserve during the 1963 grazing season. In most districts moisture conditions were excellent, resulting in maximum

All aspects are to be stepped up considerably.

during 1964-65.

MANAGEMENT

It is the common objective of the Forest Service and the Eastern Rockies Forest Conservation Board that the Rocky Mountain Forest Reserve should be managed and protected in such a manner as to conserve the watershed values primarily, and at the same time utilize the other resources of the area.

Consequently, forest management units have

been established according to topography and major watersheds and divided into inter compartments and subcompartments on a strategic basis to facilitate management.

To achieve one primary objective of the Al-

berta Forest Service of a planned program of orderly timber harvesting under sustained yield, annual allowable cuts are being calculated and implemented on a compartment basis for each management unit thereby providing control and volume of timber extracted under annual and periodic controls.

Effective October 1, 1963, existing principles

governing timber cutting practices were established and reinforced by the Alberta Forest Service. Timber may be clear cut or marked depending on the species and condition of the timber. When a clear cut is approved for clear cutting, this is to be carried out in alternate strips not exceeding 40 acres in size nor in width of over 10 chains. In order to be harvested under the marking system, the volume removal is to be no more than 40%.

WEST LAND

SECTION

The Forest Land Use is administered by the Alberta Forest Service in line with the policies of the Eastern Rockies Forest Conservation Board.

Range Condition. Condition of the range has

been satisfactory throughout the Forest Reserve during the 1963 grazing season. In most districts moisture conditions were excellent, resulting in maximum

forage production and ample cover for protection.

Overutilization of range was reduced considerably from the previous year. Corrective action recently initiated on allotments having unsatisfactory conditions is now showing results and further improvement is expected.

Range Improvements. Ten cattle guards were installed and considerable fencing completed, including drift fences and boundary fencing.

Thirteen water development projects were undertaken by P.F.R.A. bringing the total to 88.

Cooperation. District forest officers continued to work closely with users of forest range in implementing management programs. In most cases cooperation was excellent.

Game Protection. No additional measures were taken to protect game winter range on the Conservation Area used by domestic livestock. The livestock ranges were managed so as to discourage the use of critical winter range in the southern part of the reserve and the stocking rate was kept at 50% of the calculated capacity in the parts of the Clearwater Forest open to grazing, while several valleys were reserved for game use.

No serious problems of competition between livestock and big game occurred during the year. In those areas where competition does exist range condition continues to be maintained in satisfactory condition.

Range Survey. Ten range allotments were resurveyed during the summer of 1963. Nine were in the Bow River Forest and one in the Clearwater.

Resurvey of existing allotments is expected to be completed during 1964. Survey of several new allotments not previously grazed is also to be undertaken.

Administrative Studies. Twelve exclosures,

production and maple cover for protection. The results of the survey are as follows:

Overall condition of range was excellent and satisfactory from the previous year. Cattle condition was generally improved on all ranges having satisfactory conditions is now showing results and further improvement is expected.

Range Improvements. Ten cattle guards were installed and considerable fencing completed, including 6000 ft of barbed wire and 1000 ft of electric fencing.

Thirteen water development projects were completed by B. F. A. during the year to 88.

Cooperation. District forest officers continued to work closely with users of forest ranges in land management programs. In most cases cooperation was excellent.

Game Protection. No additional measures were taken to protect game winter range on the Conservation Area used by the livestock. The livestock ranges were managed so as to discontinue use of critical winter range in the southern part of the reserve and the carrying rate was kept at 50% of the calculated capacity in the parts of the winter forest open to grazing. While several valleys were reserved for

The serious problem of competition between stock and big game occurred during the year. In those areas where some thin does exist range condition continues to be maintained in satisfactory condition.

Range Survey. Ten range allotments were surveyed during the summer of 1933. Five were in the Bow River Forest and five in the Clearwater.

Resurvey of existing allotments is expected to be completed during 1934. Survey of several new allotments not previously grazed is also to be undertaken.

Administrative Studies. Twelve exclosures

each with two associated transect clusters were established in the Bow River Forest during 1963. A total of 28 exclosures are now located in the Forest Reserve. Completion of the program calls for five more exclosures, one in the Bow River and four in the Clearwater.

All transects measured during the year fell in the "fair" condition classification.

The network of exclosures and transects will be maintained as a permanent means of checking range condition.

The Forest Entomology and Pathology Branch

continued their surveys and investigations, basic to the protection of forests from insects and diseases. The progress made in these programs during 1963-64 is reported hereunder:

Watershed Research

The past year was one of considerable progress

in the Bow River (Alberta) Watershed Research Program. Much of the effort was spent in the Great Creek basin, but considerable work was also done in other parts of the program, the ultimate objective of which is the application of results of research to improve watershed management.

Testing of promising long treatments in gauged

FOREST AND WATERSHED RESEARCH

The cooperative research program referred to in the 1962-63 annual report has continued to make good progress. The following agencies each carried out a part of the watershed research and in addition the Forest Research Branch, Department of Forestry, Canada, continued with a silvicultural research program in the Conservation Area:

Forest Research Branch,	Department of Forestry
Forest Entomology and	
Pathology Branch,	" " "
Meteorological Branch,	" " Transport
Prairie Farm Rehabilitation,	" " Agriculture
Research Branch,	" " "
Water Resources Branch	
(Federal)	" " Northern Affairs and
	National Resources
Industrial Waters Section,	" " Mines and Technical
	Surveys (Federal)
Water Resources Branch	
(Alberta),	" " Agriculture
Alberta Forest Service,	" " Lands and Forests
Research Council of Alberta	

The Forest Entomology and Pathology Branch continued their surveys and investigations basic to the protection of forests from insects and diseases. The progress made in these programs during 1963-64 is reported hereunder:

Watershed Research

The past year was one of considerable progress in the East Slopes (Alberta) Watershed Research Program. Much of the effort was spent in Marmot Creek basin, but considerable work was also done in other phases of the program, the ultimate objective of which is the application of the results of research to improve watershed management.

Testing of promising land treatment in gauged

basins and other experimental trials will be included in the program. Much of the work to the present, and in fact the work of the next few years, has been or will be, in the instrumentation of basins, assessing the factors and problems and making preparation for final treatments. Nevertheless, this work will not overshadow the more fundamental research, especially during the early period while the basins are being calibrated and treatments decided upon. However, even the fundamental research, such as the plot and reconnaissance studies, is closely tied to the basin projects.

Three basin projects are envisaged - Marmot Creek (in sub-alpine spruce-fir), Streeter Basin (selected this year in aspen-forestland) and a lodgepole pine basin as yet unselected.

In order to apply knowledge gained in the basin studies to the rest of the East Slopes a knowledge of conditions over the entire area is needed. For this reason, and also to assist in planning further research, the program includes a climatological and hydrometric network.

The work done on the three basin studies, the networks, and the initiation of some plot and reconnaissance studies are outlined in this report.

MARMOT CREEK BASIN

The important work of metering the flow from the basin, and also from each of the sub-basins was begun in 1962 by the construction of a gauging structure on the main stream near the lower end of the basin and the emplacement of temporary controls on three sub-basins. Permanent stream gauges were placed on the three streams during 1963, thus facilitating the measurement of flow from each of the three branches of Marmot Creek as well as from the main stream. The main station and those on Twin Creek and Middle Fork are V-notched, sharp-crested weirs backed by stilling basins. On Cabin Creek an H-flume was installed because of its ability to handle more sediment and debris. The weirs were rated and data gathered but no results are yet available.

Some information that may have significance in subsequent studies was gathered during the year. The temporary gauges emplaced in the sub-basins were operated between break-up and construction of permanent gauges. Initially, the total flow recorded checked closely to the total flow in the main stream gauge, but later in the season, after frost was out of the ground and flow lessened, a distinct discrepancy was noted. During

construction pronounced seepage was noted in the unconsolidated mantle forming the streambed and this was corroborated by measurements which indicated a diminishing of surface flow above the gauges on Twin and Middle Forks. This emphasizes the need for groundwater checks and care in estimating the water budget for the basin.

Sampling for sediment load was begun at the main stream gauge. Samples for water quality were taken elsewhere. It is noteworthy that the samples taken showed little sediment and even the results of the disturbance of building three stream gauges above the sampling point and considerable road work were not evident in the samples.

The stream gauging work and the sediment study is carried out by the Federal Water Resources Branch. Analysis for water quality is done by the Industrial Waters Section, Department of Mines and Technical Surveys.

The Meteorological Branch undertook to plan, install and operate a network of meteorological instruments of sufficient intensity and distribution to yield detailed knowledge of the climate of the basin. A majority of the installations was completed during 1963 and the main stations were in operation. The table below summarizes the climatological network in Marmot Creek:

<u>Location, Number and Type of Instruments in Marmot Basin</u>			
Confluence Area	Cabin Creek	Middle Fork	Twin Creek
<u>Precipitation and Snowpack</u>			
5 Standard gauges	2 standard gauges	4 standard gauges	4 standard gauges
2 tipping Buckets	1 Sacramento storage gauge	1 Sacramento storage gauge	3 Sacramento gauges
1 long-term recorder	2 snow stakes	3 snow stakes	4 snow stakes
9 snow courses		6 snow courses	3 snow courses

Temperature and Humidity

5 max-min. temperature recorders 2 hygrothermographs 1 hygrothermograph 2 thermographs

Solar Radiation

1 CSIRO
radiometer

Along with the collection of data, studies of precipitation and snow were begun. One compares the rainfall catch by standard and small orifice gauges and also compares the catch by horizontal and sloped orifices. The effect of size opening in the canopy of the spruce-fir forest upon the rainfall and snow is also measured. Still another study aims to determine interception of rain by measuring rainfall above and below the canopy. Gauges are located on the net radiometer tower and also in a random grid on the ground under the forest cover.

Snow courses and stakes, read periodically in late winter and spring, supply data on the snowpack. Other courses were located to indicate accumulation beneath uncut spruce-fir forest and the effects of aspect upon the snowpack.

The calculation of the depth of the snowpack by photogrammetric methods is being tried out. Photographs taken of the basin in the early spring of 1963 are being compared with snow-free photos by methods which, it is believed, will give a volumetric estimate of snowpack.

Soil moisture and temperature are being recorded at a few points by the use of Coleman soil moisture units.

The above mentioned studies are conducted by the Meteorological Branch and the Forest Research Branch.

To supply basic data in support of further research, progress was made in the following projects:

1. A topographic map at the scale of 1" = 500' with 20' intervals was

prepared by the Technical Division, Alberta Department of Lands and Forests, from a survey by Alberta Water Resources Branch.

2. The basin was re-photographed on modified infra-red film by the Alberta Forest Service.
3. A survey by the Alberta Soil Survey indicated five distinct soil types:- Biscqua grey wooded, podzol, regosol, alpine black and organic soils.
4. A geophysical survey by the Research Council of Alberta indicated the thickness of the till and overburden to range from 20 - 30 feet over most of the basin (exclusive of the alpine zone).
5. A habitat-type study by the Forest Research Branch recognized nine forest types, nine alpine types and five meadow types.
6. A forest inventory by the Alberta Forest Service was undertaken in greater detail than the previous survey, and age, height and species composition information was gathered on a 10-chain grid.
7. Area-elevation and area-slope curves and stream profiles were done by Eastern Rockies Forest Conservation Board.
8. An insect and disease survey by the Forest Entomology and Pathology Branch showed no problems at present.

The functions of some agencies in this co-operative program are, at least in part, to supply facilities and services. A large part of the work and finance has been applied in building and maintaining ground access, installing electric power, constructing a cabin, making living quarters available in the vicinity, and supplying helicopter access to high-elevation stations. All are an essential part of the research program and credit is due the Alberta Forest Service, Forest Research Branch, and others. Credit is also due to Calgary Power Limited for their cooperation and generosity in the arrangements to make power available at the major instrument installations, and in the snowploughing of the Marmot Road.

STREETER BASIN

In the lower valleys and foothills (Montane zone) of the southern half of the East Slopes

and use has an important influence upon water quality and possibly also streamflow regime. A second basin was selected to study these influences.

In order to obtain the best stream basin a selection procedure was drawn up and followed. By scrutiny of air photos a number of candidate basins were selected. Preliminary examination from a fixed-wing aircraft reduced the initial selections to eight. A geological and groundwater examination eliminated those in a highly disturbed belt. Access, road possibilities, land tenure and under-rights were checked. Water Resources and the Meteorological Branch checked for suitability for their purpose. Following this a working group met and made the final selection.

The basin chosen, and later named Streeter basin, is a small tributary of south Willow Creek lying toward the north end of the Porcupine Hills. It contains almost 2.5 square miles. Topographically it consists of steep rolling hills, rising to an altitude of about 5,000 feet. The cover is mixed grass and scrub forest. The forest patches are aspen poplar with scattered Douglas fir and white spruce, and the grass comprises a weedy fescue association.

Only one study was begun in the area, an ecological-pedological reconnaissance. General observations were made and plans were formulated to study the invasion of aspen into grassland.

A working group met with the Research Coordinator (1) and drew up a plan of work similar to the one followed in Marmot Creek.

LODGEPOLE PINE BASIN

Lodgepole pine is the most abundant forest cover type on the Saskatchewan River headwaters. Any program of watershed management and, especially, watershed improvement would involve this type. The next basin to be selected and prepared for research will be in this type in the Clearwater Forest. General plans for the selection of such a basin, or basins, were drawn up by the working group under the leadership of the Research Coordinator.

INVESTIGATIONS OUTSIDE GAUGED BASINS

Even before Marmot Creek project was begun an exploratory study to determine methods of separating a landscape into broad and useful

(1) Mr. W.W. Jeffrey, Research Officer, Forest Research Branch, Canada Department of Forestry, Calgary, Alberta

units for watershed research and management purposes was initiated in the basin of the Northwest Branch of the Oldman River in 1961. The study involved surface geology carried out by the Research Council of Alberta, soils study by the Agricultural Research Branch and plant ecology of the Forest Research Branch. Surface geology was established for the entire basin and soils and vegetation on a representative transect. The geology, soil study and plant ecology were combined to delineate land units called ecosystem-types, which can be easily recognized on the ground, present differences pertinent to watershed management and are based upon existing conditions. These land units give promise in classification for watershed research and management.

This study was completed in 1963-64 and is being processed for publication. It will appear under the title "Land-Vegetation Typology in the Upper Oldman River Basin, Alberta" by W.W. Jeffrey, L.A. Bayrock, and L.E. Lutwick.

Several other studies were begun outside Marmot Basin but associated with the basin studies. One on the Kananaskis Forest Experiment Station includes five plots in overmature and immature stands of lodgepole pine for the purpose of determining the magnitude of interception of rainfall and stemflow. Roving standard rain gauges, trough gauges and stem collars are used to indicate relative rainfall under forest canopy and in the open, as well as the flow down the stems.

Soil moisture studies using a Troxler neutron probe and scaler were begun. The main benefit of the work was in the form of experience in the use of the new nuclear equipment.

A forest litter study was begun with the use of a device to measure percentage of rainfall absorbed by litter. Litter under spruce-fir was so absorbent that, for the storms measured, all rainfall was absorbed.

A study of snow accumulation and melt under different densities of lodgepole pine was begun. The snowpack during the winter of 1962-63 was very light and all snow disappeared during chinook winds, but useful data are expected from normal snowfall in subsequent years. These precipitation, soil moisture and snow studies are the work of the Forest Re-

earch Branch with assistance by the Meteorological Branch.

An erosion hazard study, designed to evaluate relative susceptibility to erosion of different types of surficial deposit in the spruce-fir forest, is being conducted by a student for his Ph.D thesis. The Forest Research Branch, the Geology Department, University of Alberta, and the Research Council of Alberta, are supporting and assisting this project.

NETWORKS

Climatological and hydrometric networks of the headwaters of the Saskatchewan River have been planned in a general way by the respective sub-committees of the Technical Coordinating Committee. The climatological network sub-committee includes representatives of the Meteorological Branch, Prairie Farm Rehabilitation Administration, Eastern Rockies Forest Conservation Board, Forest Research Branch and Water Resources Branch (Canada). The hydrometric sub-committee includes the Water Resources Branch (Canada), the Water Resources Branch, (Alberta), and the Prairie Farm Rehabilitation Administration.

Both network plans include permanent stations and satellites, the latter being operated only until adequately correlated with the long-term stations.

Considerable detailed planning and some implementation of the climatological network has been accomplished. Most of the ranger stations of the Alberta Forest Service in the area have been included as network stations, measuring several climatic parameters, and one unattended recording-type precipitation gauge was installed in 1963.

For several years a network of nearly one hundred storage precipitation gauges has been operated jointly by the Eastern Rockies Forest Conservation Board and the Alberta Forest Service and this has been included in the broad climatological network.

The climatological network sub-committee also includes some snow measurement in its work and in 1963 nine snow courses were selected in the mountains south of the Bow River. They were located at various elevations and are mostly co-located with precipitation gauges.

MEETINGS

The Technical Coordinating Committee of the

watershed research program met in December, 1963, to review work done and to discuss plans proposed by the Research Coordinator.

The Steering Committee met in February, 1964, and approved most of the accomplishments and plans of the Technical Coordinating Committee.

Board staff continued to participate actively in the research program as reported upon in last year's annual report.

Forest Research

The Forest Research Branch, Canada Department of Forestry has continued research on forest management problems in the Conservation Area in cooperation with the Board and the Alberta Forest Service along the lines indicated in previous annual reports. A report of the Department on the work done during 1963 is given below:

"The silvicultural and ecological investigations were continued in the Crowsnest Forest. Particular attention has been paid to the influence of seedbed conditions on germination and survival of seedlings on a range of representative sites and forest conditions. Recent publications on these studies include:

Regeneration after logging in the Crowsnest Forest
by R.J. Day and P.J.B. Duffy, Department of Forestry
Publication No. 1007. 1963.

Spruce seedling mortality caused by adverse summer
micro-climate in the Rocky Mountains by R.J. Day,
Department of Forestry Publication No. 1003. 1963.

Notes on plant distribution in the Rocky Mountains
of Alberta by R.T. Ogilvie. Canadian Journal of
Botany Volume 40. pp. 1091-1094. 1962.

The micro-environments occupied by spruce and fir
regeneration in the Rocky Mountains by R.J. Day,
Department of Forestry Publication No. 1037. 1964.

Current research being conducted within the

framework of the silvicultural and ecological program includes studies in pre-logging scarification. This treatment was introduced in 1960 by the Alberta Forest Service in an attempt to aid regeneration of high-elevation spruce-fir stands. Germination and seedling mortality are recorded and the results will be related to seedfall and soil surface moisture. Results continue to show the advantages of overhead protection on the sites tested.

Preliminary field work was completed in 1963 for a test of shelterwood felling in high-yield spruce-fir stands of the Crowsnest Forest. Two five-acre blocks were cruised and marked for cutting with the cooperation of the Alberta Forest Service. The stands are to be logged in the summer of 1964.

There is another new project in the Crowsnest Forest of planting hybrid spruce and Douglas fir in poorly stocked cut-overs. The planting areas have been selected and seedling markers and soil moisture instrumentation have been installed so that planting may be speedily carried out in 1964. Standard 3 - 0 white spruce and Douglas-fir from the Crowsnest Forest allotment will be set out in 1964 and specially prepared 2 - 3 hybrid spruce, Douglas-fir and lodgepole pine stock will be ready for planting in 1968. The trial is being conducted in three major drainages south of the Crowsnest Pass and is being replicated on three sites in each basin.

Some preliminary study has been made on the release by clearcutting upon suppressed alpine-fir which has grown up under old stands. The first studies indicate that fir survives and grows well when released. Although this species is not now considered valuable as saw-timber its value may increase. On the other hand its adverse influence upon the regeneration of more valuable species should be known."

Note: Enquiries with respect to this section on Forest Research should be addressed to the Forest Research Branch, Department of Forestry, 721 Public Building, Calgary, Alberta.

FOREST ENTOMOLOGY AND PATHOLOGY INVESTIGATIONS

A report on insect and disease conditions in the Rocky Mountains Forest Reserve for the calendar year 1963 is reported on here-under by the Forest Entomology and Pathology Branch of the Department of Forestry, Canada, Calgary, Alberta.

network of the silvicultural and ecological program includes studies in logging scarification. This treatment was introduced in 1960 by the A.P. a forest survey in an attempt to aid regeneration of high-elevation cedar stands. Germination and seedling mortality are recorded and the site will be related to seedbed and soil surface moisture. Results continue show the advantages of overhead protection on the sites tested.

Preliminary field work was completed in 1964 for a test of shelterwood falling in high-yield spruce-fir stands of the western forest. Two five-acre blocks were cruised and marked for cutting in the cooperation of the Alberta Forest Service. The stands are to be logged in the summer of 1965.

There is another new project in the Crowns. A forest of planting hybrid spruce and Douglas fir in poorly stocked cut-overs. The planting areas have been selected and seedling material and soil tests instrumentation have been installed so that planting may be speedily started out in 1964. Standard 3 - 0 white spruce and Douglas fir from the Crown's forest of planting will be set out in 1964 and speedily prepared. 3 - 0 hybrid spruce, Douglas fir and lodgepole pine stock will be ready for planting in 1965. The trial is being conducted in three major drainage units of the Crown's forest and is being replicated on three sites in each unit.

Some preliminary study has been made on the effects of clearcutting upon suppressed alpine-fir which has grown up under spruce-fir stands. The first studies indicate that fir survives and grows well when released. Although this species is not now considered valuable as saw-timber, it may increase. On the other hand its diverse influence upon the regeneration of more valuable species should be known.

Studies with respect to this section on forest research should be addressed to the Forest Research Branch, Department of Forestry, 731 Public Building, Calgary, Alberta.

A report on insect and disease conditions in the Rocky Mountain Forest Reserve for the calendar year 1963 is reported on here under by the Forest Entomology and Pathology Branch of the Department of Forestry, Canada, Calgary, Alberta.

FOREST ENTOMOLOGY AND PATHOLOGY INVESTIGATIONS

"Damage from forest insects and diseases in the Conservation Area is assessed each year as part of the survey and research program conducted by the Department of Forestry, Forest Entomology and Pathology Laboratory which is based at Calgary. Permanent facilities for field research are located at Kananaskis Forest Experiment Station.

The most serious recurrent damage from forest pests in the Conservation Area continues to be from the Douglas fir bark beetle, larch sawfly, dwarf mistletoe, Atropellis canker, and pine stem rusts. Other insects and diseases cause either recurrent minor damage or periodic and local damage of more serious proportions. The following is a summary of 1963 conditions.

Insects

The Douglas fir beetle is confined to the Porcupine Hills, and in 1963 it was most active in the southern part of this region. The largest infestation was immediately south of Damon Creek. Smaller infestations occurred at Playle Creek, North Creek, and in the valleys tributary to Sharples Creek. The larch sawfly was evident again from north of Nordegg to just south of Clearwater Ranger Station and east to Caroline.

There were many less damaging but commonly occurring insects noted in the area, the more important of which were: spruce gall aphid - causing malformations to branch tips on spruce, generally throughout the east slopes area; grey willow leaf beetle - causing moderate to severe skeletonization of willow from Nordegg to Marmot Creek; American aspen beetle - causing severe defoliation of Aspen at Crimson Lake and Strachan and light defoliation south to the Porcupine Hills; forest tent caterpillar - light and intermittent defoliation of aspen from Crimson Lake to near Cochrane

Diseases

Dwarf mistletoe has an intermittent but frequent distribution on lodgepole pine all through the Conservation Area. The most seriously affected localities noted so far are near Blairmore, Elkwater, 13 miles north of Coleman, Dutch Creek, 16 miles south of Kananaskis Forest Experiment Station, Jumping Pound, Panther Creek, and west of Upper Saskatchewan Ranger Station. Atropellis stem canker of lodgepole pine has an even more extensive distribution that features large continuous areas of very high incidence. The areas of greatest concentration and damage are near Castle Ranger Station, at Kananaskis For-

st Experiment Station, and continuously from Fallen Timber Creek to north of Nordegg and east to Caroline. Pine stem rusts cause excessive mortality in young pine stands in fairly localized parts of the Conservation Area. The most damaging stem rust occurs on whitebark and limber pines, generally in the Crowsnest Forest where these two species occur.

Other common but less damaging diseases noted in 1963 were: pine needle rust - light defoliation at Ribbon and Marmot Creeks; pine needle cast - light defoliation generally in the Bow and Clearwater Forests; spruce cone and needle rusts - light damage in the Clearwater Forest; poplar ink spot - small areas of intensive defoliation of aspen near Burmis and Ptolemy Creek. Damage from red belt was very common to pine and spruce in the northern half of the Conservation Area.

Detailed accounts of forest insect and disease conditions are available from the following reports of the Department of Forestry:"

Annual Report of the Forest Insect and Disease Survey.

" " " " " Entomology and Pathology Branch.

" District Reports of the Forest Insect and Disease Survey
- Alberta Region

Note: Copies of these reports are available on request from the Officer-in-Charge, Forest Entomology and Pathology Laboratory, 102-11 Ave. S.E., Calgary, Alberta.

FOREST PROTECTION

A total of forty-eight forest fires were recorded in the Conservation Area during the 1963 calendar year compared with 58 during the preceding year.

Area burned amounted to 77.38 acres compared with five acres during 1962.

Fires by Causes

	<u>Total Fires</u>		<u>Per Cent</u>	
	1963 - 1962		1963 - 1962	
Lightning	11	24	23.1	41.4
Campers	24	19	50.0	32.7
Smokers	4	3	8.3	5.2
Industrial	1	5	2.0	8.6
Public Projects	2	2	4.1	3.5
Miscellaneous Causes	6	5	12.5	8.6
	<u>48</u>	<u>58</u>	<u>100.0</u>	<u>100.0</u>

Fires by Forest

	<u>Number</u>	<u>Area Burned</u>
Bow River Forest	13	71.0 acres
Crowsnest Forest	10	2.83 "
Clearwater Forest	25	3.55 "
	<u>48</u>	<u>77.38 acres</u>

The Board paid tribute to the Alberta Forest Service for an excellent fire record over the past few years, largely due to the efficiency of its fire prevention service.

UTILIZATION OF RESOURCES

FOREST PRODUCTION Statistics on timber licenses, timber permits and production of lumber and related products in the Rocky Mountains Forest

Reserve, as reported by the Alberta Forest Service for the year under review, are noted hereunder:

Number of Timber Licenses Offered for Sale	10
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Number of Timber Licenses sold	10
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Volume of Timber offered for sale: Coniferous	126,571,000 f.b.m.
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Number of Special Timber Permits issued	2
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Number of Miscellaneous Timber Permits issued	391
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Number of Active Timber Licenses	85
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Production of Lumber and Related Products -

Lumber - f.b.m.	73,887,105
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Railway Ties (pieces)	32,717
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Round Timber (lineal feet)	10,746,764
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Lath (pieces)	3,308,450
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Slabs and Fuelwood (cords)	3,892
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Christmas Trees (number)	7,090
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Trees for Transplanting (number)	1,232
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Pulpwood (cords)	1,194
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The following information has been supplied

by the Alberta Forest Service:

NATURAL GAS AND OIL DEVELOPMENT

During the year 1963-64 ten drilling sites within the Forest Reserve were active.

Three gas wells were completed, five holes were abandoned and two were still incomplete at the end of the period. The completions were in proximity to existing fields and did not constitute new discoveries.

Companies involved included Imperial Oil Enterprises, Shell Canada Ltd., Texas Gulf Sulphur Co. Ltd., California Standard Co., Triad Oil Company, Socony Mobil, and Sinclair Canada Ltd.

GRAZING

The number of domestic animals grazed under permit as compared with the previous year are noted hereunder:

	<u>Crowsnest Forest</u>		<u>Bow River Forest</u>	
	<u>1962</u>	<u>1963</u>	<u>1962</u>	<u>1963</u>
Cattle	13,520	14,031	8,154	9,145
Horses *	-	-	250	258
Sheep	995	1,040	-	-
Total Animals	<u>14,515</u>	<u>15,071</u>	<u>8,404</u>	<u>9,403</u>
Actual Use in A.U.M. **	47,777	49,773	31,372	34,724
Revenue	\$36,114.74	\$44,573.81	\$23,838.27	\$30,116.30
Permits	186	187	87	99
	<u>Clearwater Forest</u>		<u>Total Rocky Mountains Forest Reserve</u>	
	<u>1962</u>	<u>1963</u>	<u>1962</u>	<u>1963</u>
Cattle	1,016	1,031	22,690	24,207

Horses*	381	213	631	471
Sheep	-	-	995	1,040
Total Animals	<u>1,397</u>	<u>1,244</u>	<u>24,316</u>	<u>25,718</u>

Actual Use in A.U.M.**	6,853	7,052	86,002	91,549
Revenue	\$3,754.31	\$3,839.16	\$63,707.32	\$78,529.27
Permits	40	27	313	313

* An additional 1,800 pack and saddle horses were brought into the Forest Reserve for varying periods.

** A.U.M. - Animal Unit Month - the equivalent of one 1,000-pound cow with calf for one month.

RECREATIONAL PLANNING

The Board's main function is to maintain an optimum flow of high-quality water from the East Slopes of the Rocky Mountains to the Saskatchewan River. Water conservation practices must therefore take precedence over all other uses.

It is therefore not the Board's policy to promote recreational use of the Conservation Area. Strict regulations are established governing recreational use in order to reduce fire risk and to keep water pollution to a minimum.

To assure orderly development of recreational facilities the Alberta Forest Service is intensifying its supervision of campground development with a view to improving the standard of campgrounds.

TRAVEL STATISTICS

Registration of travellers entering the Conservation Area was discontinued on December 31, 1963. Figures compiled from registrations for the nine-month period from April 1 to December 31, indicated that some 295,148 persons travelling in 96,716 vehicles entered the Forest Reserve during this period. This compares with 300,040 persons and 99,275 vehicles registered during the previous 12-month period.

As has been the trend in past years the Bow River Forest continued to be the most heavily travelled with 167,831 registrations compared with 74,660 in the Crowsnest Forest and 52,657 in the Clearwater Forest.

Approximately 75% of the travel was recorded during the period May through November, averaging about 31,662 persons or 14% per month.

Purpose of travel is outlined hereunder:

Picnicking and Camping	143,654	48.7%
Fishing	64,342	21.8%
Hunting	65,108	22.0%
Commercial	22,044	7.5%
	<u>295,148</u>	<u>100.0%</u>

No serious fires were attributed to recreational use although 24 small fires were reported as caused by campers, mostly hunter fires during the fall.

CONSTRUCTION AND MAINTENANCE

NEW CONSTRUCTION

The purpose of all new roads is for forest protection and management and the Alberta Forest Service continued its long-range program of improvement and new construction of roads, bridges and airstrips in the Rocky Mountains Forest Reserve in line with the Board's established policy, and watershed values and their conservation are considered when engineering principles are applied to road location and construction.

Progress on new construction carried out by the Alberta Forest Service is reported on hereunder:

ROADS

A total of 120.16 acres of right-of-way was cleared for new roads in the Forest Reserve and 51.5 miles of new grade constructed. All major construction projects which were programmed for the year were completed. Cost of road work for the year amounted to \$166,350.

BRIDGES

Four new bridges and nine replacements were constructed during the year as detailed below:

On the Forestry Trunk Road three bridges were replaced. One 20-foot precast concrete bridge was erected across Bridge-land Creek; a pressure-treated wooden structure was erected across Teepee-Pole Creek and a 40-foot precast bridge was erected across the James River.

On the Prairie Creek Road in the Clearwater Forest a 20-foot precast concrete bridge was constructed across Prairie Creek. This is known as Prairie Creek Bridge No. 2. A 20-foot wood pressure bridge was placed across the Upper Tay River. This is known as Tay Bridge No. 2.

Blackstone Bridge No. 2 on the Chungo Road was replaced with a 124-foot steel structure.

The wooden structure across the Ram River on the Meadows-Saunders Road was replaced with a 125-foot steel bridge.

On the Elbow Road in the Bow River Forest a 60-foot steel replacement was erected across Gorge Creek and on the North Fork Road a 50-foot steel replacement was placed across Ware Creek.

On the Kananaskis Road in the Bow River Forest a pressure-treated timber bridge was constructed across Everett Creek.

Three native-timber bridges 20 feet in length were erected on the Lynx Creek Road in the Crowsnest Forest.

On June 29, rain in excess of four inches fell during an eight-hour period causing mountain streams to overflow and seriously damage many roads and bridges throughout the area. A special warrant of approximately \$50,000 was obtained by the Alberta Forest Service to institute repairs to the Forestry Trunk Road and secondary roads. On July 16 a flash flood in the Ram River area of the Clearwater Forest washed out the Ram River Bridge which was replaced by the 125-foot steel bridge referred to above.

AIRSTRIPS

Airstrip construction and improvement continued in all three forests.

In the Crowsnest Forest an airstrip was constructed in the Livingstone area measuring 150 feet by 3,400 feet.

An airstrip adjacent to the Ghost Ranger Station in the Bow River Forest was partially constructed. The dimensions are 1,752 feet by 150 feet which will eventually be enlarged to a standard mud bombing strip.

In the Clearwater Forest an airstrip 150 feet by 3,100 feet in length was constructed at Shunda. This is a mud bombing strip and has been equipped with slurry pits.

The Upper Saskatchewan airstrip was lengthened, seeded to grass, and is now equipped with slurry pits.

BUILDINGS

The building construction program increased over the previous year and approximately

\$52,000 was expended.

In the Bow River Forest a new ranger house was constructed at the Elbow Ranger Station. Fuel sheds were constructed at the Sheep and Red Deer Ranger Stations and the Burnt Timber Lookout was constructed.

In the Crowsnest Forest a new ranger house was constructed at the Porcupine Ranger Station. An addition was built to the Lynx Creek Cottage. Natural gas was installed at Porcupine Ranger Station and a power line was constructed to the station. A new camp shelter and campground were constructed at Indian Grave.

In the Clearwater Forest, Limestone Lookout was erected and a campground was constructed at Siffleur River.

MAINTENANCE

The road maintenance program in the Rocky Mountains Forest Reserve has increased each year. The Forestry Trunk Road is maintained to a good standard and no increase in coverage is anticipated. In line with the policy of consistent improvement 81 miles of the trunk road were re-ditched, re-shaped and gravelled with crushed material.

Secondary roads received the usual maintenance attention but to a lesser degree than the trunk road.

Regular building maintenance was carried out at all ranger stations in the Forest Reserve. As part of the conversion program to heating units two ranger residences were converted to propane gas. The Ram Lookout was also converted to propane.

252,000 was expended.

In the Bow River Forest a new ranger house was constructed at the Elbow Ranger Station. Fuel sheds were constructed at the Elbow and Deer Ranger Stations and the Burnt Timber Ranger Station.

In the Crownst Forest a new ranger house was constructed at the Forquihine Ranger Station. An addition was made to the Forquihine Ranger Station. A new camp shelter and a power line was constructed to the station. A new camp shelter and a power line were constructed at Indian Grove.

In the Clearwater Forest, Limestone Lodge was erected and a campground was constructed at Stillwater River.

MAINTENANCE

The road maintenance program in the Rocky Mountain Forest Reserve has increased each year. The Forestry Lane Road is maintained to a good standard and an increase in coverage is anticipated. In line with the policy of constant improvement 81 miles of the main road were re-graded, resurfaced and gravelled with crushed material.

Secondly, roads received the usual seasonal maintenance but to a lesser degree than the main road.

Regular building maintenance was carried out on all ranger stations in the Forest Reserve. As part of the conversion program two ranger residences were converted to ranger houses. Two ranger houses were also converted to ranger houses.

Regular maintenance was carried out on all ranger stations in the Forest Reserve. As part of the conversion program two ranger residences were converted to ranger houses. Two ranger houses were also converted to ranger houses.

Regular maintenance was carried out on all ranger stations in the Forest Reserve. As part of the conversion program two ranger residences were converted to ranger houses. Two ranger houses were also converted to ranger houses.

ACCOUNTING

EXPENDITURE

Administrative expenditure relative to the operation of the Board amounted to \$57,076.84 as compared with its appropriation of \$58,000.00, provided by the Province of Alberta under vote 1819 as detailed hereunder:

	<u>General Administration</u>	<u>Watershed Research</u>	<u>Total Expenditure</u>
Automobiles, Trucks, Mobile Equipment	\$ 617.31	\$ 680.47	\$1,297.78
Fees and Commissions	1,030.00	2.00	1,032.00
Freight, Express, Cartage	17.57	-	17.57
Furnishings, Equipment and Tools	102.05	349.95	452.00
Materials and Supplies - Administrative and Operating	1,550.99	370.93	1,921.92
Materials and Supplies - Construction and Maintenance	44.67	401.45	446.12
Pension Contributions - Annuities	451.80	-	451.80
Postage	125.00	-	125.00
Rentals of Equipment	181.70	685.71	867.41
Repairs to Equipment and Furnishings	95.45	-	95.45
Telephone and Telegraph	273.30	-	273.30
Travelling Expenses	2,628.81	466.72	3,095.53
Salaries and Wages	46,997.71	-	46,997.71
Light, Power and Heating Fuel	3.25	-	3.25
	<u>\$54,119.61</u>	<u>\$2,957.23</u>	<u>\$57,076.84</u>

A current account is maintained with the Royal Bank of Canada, Calgary, Alberta, from which the Board disburses its administrative expenses. All expenditures by the Board are subject to audit by the Provincial Auditor.

Expenditure for the maintenance and administration of the Conservation Area, including expenses of the Board, provided

by the Province of Alberta in accordance with Section 2 (a) (11) of the Memorandum of Agreement between the Government of Canada and the Government of the Province of Alberta amounted to \$959,526.79 for the fiscal year under review.

For financial details see appendix "B", statement "A", "B" and "C".

REVENUE

Revenue derived by the Alberta Forest Service from surface rights in the Conservation Area amounted to \$526,993.20, an increase of \$47,447.44 over the preceding year. Details of revenues are summarized hereunder:

	<u>1962-63</u>	<u>1963-64</u>
Grazing Permits, Taxes and	\$	\$
Revenue Permits	63,217.67	78,919.55
Hay Permits, Fees, Dues, Etc.	5.50	5.00
Miscellaneous Leases	1,906.00	1,812.16
" Revenue	346.43	154.15
Timber Permits	7,878.27	8,288.96
Special Timber Permits	1,616.39	1,778.17
Timber Fees, Rent, Etc.	23,306.79	20,641.95
Timber Dues	364,213.24	392,663.31
Administrative Sundry Revenue	15,828.45	19,241.75
Timber Miscellaneous Revenue	140.03	-
Right-of-Entry	1,086.99	1,008.20
Reimbursement of Salaries		
and Expenses	-	2,480.00
	<u>\$ 479,545.76</u>	<u>\$ 526,993.20</u>

WORKMEN'S COMPENSATION

The Board's deposit of \$5,000.00 with the Alberta Workmen's Compensation Board earned interest of \$219.16, less administrative expense and reserve for rehabilitation and enhanced disabilities of \$80.00, leaving a net credit to Proprietary Equity of \$139.16.

No claims for injuries were incurred by Board personnel (non civil servants) during the fiscal year under review.

the Province of Alberta in accordance with Section 2 of (1) of the Agreement of Agreement between the Government of Canada and the Government of the Province of Alberta amounted to \$25,000.00 for the fiscal year ended 1963-64.

For financial details see appendix "B", state-

ment "A", "B", and "C".

2. VALUE

Revenue derived by the Alberta Forest Service from various rights in the Convention Area amounted to \$250,993.20, an increase of \$47,447.44 over the preceding year. Details of revenues are furnished hereunder:

1963-64	1962-63	
2	2	Gravel, Lumber, Lumber and
78,418.35	63,217.67	Revenue
2.30	5.30	Hay, Lumber, Lumber, etc.
1,812.10	1,904.00	Miscellaneous Lumber
124.72	246.43	Revenue
21,202.88	7,878.27	Timber Lumber
1,778.77	1,616.39	Special Timber Lumber
10,644.93	23,306.79	Timber Lumber, Lumber, etc.
292,660.81	264,218.24	Timber Lumber
19,281.75	12,828.42	Administrative Lumber Revenue
1,008.30	140.02	Timber Miscellaneous Revenue
	1,086.49	Right-of-Entry
		Reimbursement of Salaries
		and Expenses
<u>2,480.20</u>	<u>2,479,345.78</u>	
<u>2,480.20</u>	<u>2,479,345.78</u>	

WORK MEN'S COMPENSATION

The Board's deposit of \$5,000.00 with the Alberta Workmen's Compensation Board earned interest of \$219.16, less administrative expense and reserve for rehabilitation and enhanced disabilities of \$80.00, leaving a net credit to Proprietary Equity of \$139.16.

No claims for injuries were incurred by Board personnel (non civil servants) during the fiscal year under review.

ESTIMATES
FISCAL YEAR
1964-65

No. 1819.

Estimates for the administration of the Board
for the fiscal year 1964-65 in the amount of
\$60,800.00 were approved by the Legislature
of the Province of Alberta under Appropriation

DISTRIBUTION OF ALBERTA FOREST SERVICE PERSONNEL

Fiscal Year 1963-64

<u>Permanent Staff</u>	<u>Rocky Mountains Forest Reserve - Calgary Office</u>	<u>Crowsnest Forest</u>	<u>Bow River Forest</u>	<u>Clearwater Forest</u>	<u>TOTALS</u>
Forest Superintendents	-	1	1	1	3
Assistant Superintendents	-	1	1	1	3
Foresters	-	1	1	1	3
Chief Rangers	-	1	1	1	3
District Rangers	-	6	7	5	18
Assistant Rangers	-	4	9	5	18
Chief Clerks	1	-	-	-	1
Clerks - Stenographers	1	2	3	3	9
Radio Operators	-	1	2	1	4
Maintenance Foremen	-	-	-	-	-
"	1	-	-	-	1
"	1	-	-	-	1
" - Roads	1	-	-	-	1
Mechanical Foremen	-	1	1	1	3
Garage Mechanics	1	-	-	-	1
Graders	2	-	-	-	2
Warehousemen	-	-	1	-	1
Truck Drivers	1	-	-	-	1
Lookoutmen - Permanent	-	1	1	1	3
Lookoutmen - Seasonal	8	19	28	20	75
	-	6	9	8	23
	8	25	37	28	98

GOVERNMENT OF THE PROVINCE OF ALBERTA
OFFICE OF THE PROVINCIAL AUDITOR

EDMONTON,

June 19, 1964

Eastern Rockies Forest Conservation Board
CALGARY, Alberta

I have audited the books and records of the Eastern Rockies Forest Conservation Board, maintained by the Department of Lands and Forests, Government of the Province of Alberta, for the year ended March 31, 1964 and submit the following statements herewith:

<u>Statement</u>	<u>Particulars</u>
A.	Balance Sheet
B.	Statement of Maintenance Expenditure
C.	Statement of Government of Canada and Government of Province of Alberta Equity

Total capital expenditures from inception to March 31, 1955 amounting to \$6,278,906.10 were made from funds provided by the Government of Canada (as authorized under Section 8 (a) of the Memorandum of Agreement) for the location and construction of forest improvements, the making of a forest inventory, reforestation, and such other works and services as the Board considered necessary in that area of the East Slope of the Rocky Mountains forming part of the watershed of the Saskatchewan River, as more definitely described in the Appendix to the Act. The total expenditure was not to exceed \$6,300,000.00 during the seven years ended March 31, 1955.

I certify, that in my opinion, the attached Balance Sheet is properly drawn up so as to show the true financial position of the Eastern Rockies Forest Conservation Board as at March 31, 1964 according to the information and explanations given to me and as shown by the records of the Board and the accompanying statements correctly set forth the result of transactions for the year ended at that date.

G. H. Lamborn
F. C. A.
Provincial Auditor.

Statement AEASTERN ROCKIES FOREST CONSERVATION BOARDBALANCE SHEET AS AT MARCH 31, 1964ASSETS

Workmen's Compensation Board deposit	\$ 5,139.16
Value of loose tools and equipment transferred to the Province of Alberta as at April 1, 1959	173,496.38
Capital improvements and works	<u>5,716,615.20</u>
	<u>\$ 5,895,250.74</u>

LIABILITIES

Government of Canada and Government of the Province of Alberta, equity as per Statement C	<u>\$ 5,895,250.74</u>
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- Note: Section 20 of the Memorandum of Agreement set forth in the Schedules to Chapter 59, Statutes of Canada, 1947 and Chapter 20, Statutes of Alberta, 1948 and Amendment Acts, 1957 provides that upon termination of the Agreement:
- (a) All improvements or works resulting from the carrying out of the programs of the Board shall belong to the Province.
 - (b) All other property acquired by the Board shall belong to the Province.

This is the Balance Sheet referred to in my report of June 19, 1964 addressed to the Eastern Rockies Forest Conservation Board.

G. K. Handman C. A.
Provincial Auditor.

Statement BEASTERN ROCKIES FOREST CONSERVATION BOARDSTATEMENT OF MAINTENANCE EXPENDITUREFOR THE YEAR ENDED MARCH 31, 1964

Maintenance expenses:

Salaries	\$ 392,855.66	
Wages	188,026.42	
Maintenance, material and operation expense	90,539.47	
Equipment and motor vehicle expense	90,071.70	
Rentals	61,716.63	
Administration and general expense	23,151.49	
Travelling	18,842.12	
Heat, light and power	8,698.46	
Telegrams and telephones	2,175.45	
Freight, express and cartage	1,906.50	
Honorarium	1,000.00	
Postage	733.35	
Pensions	451.80	
Advertising	78.96	
		\$ 880,248.01
Automobiles, trucks and mobile equipment		67,556.17
Furnishings, equipment and tools		11,722.61
		<hr/>
		\$ 959,526.79
		<hr/>
Provided by:		
Appropriations 1817 and 1819		\$ 959,526.79
		<hr/>

Note: The total amount expended by the Board was provided by the Government of the Province of Alberta in accordance with Section 2 (a) (ii) of the Memorandum of Agreement, dated June 17, 1953 between the Government of Canada and the Government of the Province of Alberta as set forth in the Schedules to Chapter 41, Statutes of Canada, 1952 and Chapter 36, Statutes of Alberta, 1953.

The remuneration and expenses of members of the Board were paid by the Governments of Canada and the Province of Alberta in accordance with Section 2 (b) (iii) of the Memorandum of Agreement. The amounts paid by the Province of Alberta, including the honorarium of \$1,000.00 to A. T. Baker, have been incorporated into the above statement.

Statement C

EASTERN ROCKIES FOREST CONSERVATION BOARD
STATEMENT OF GOVERNMENT OF CANADA AND GOVERNMENT
OF THE PROVINCE OF ALBERTA EQUITY
FOR THE YEAR ENDED MARCH 31, 1964

Balance as at April 1, 1963	\$ 5,895,265.73
Add:	
Workmen's Compensation Board deposit interest	139.16
	<hr/>
	\$ 5,895,404.89
Deduct:	
Workmen's Compensation Board interest remitted	154.15
	<hr/>
Government of Canada and Government of the Province of Alberta equity as at March 31, 1964	\$ 5,895,250.74
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